Installation & Maintenance Instructions

2–WAY INTERNAL PILOTED–OPERATED SOLENOID VALVES
NORMALLY CLOSED OPERATION — GENERAL SERVICE
1″, 1¼″ OR 1½″ NPT

REBUILD KIT
No. 72194 & 78389
Form No.V7437

NOTICE: See separate solenoid installation and maintenance instructions for information on: Wiring, Solenoid Temperature, Cause of Improper Operation, Coil or Solenoid Replacement.

DESCRIPTION

Valves are 2–way normally closed internal pilot–operated solenoid valves designed for general service. Valves are made of rugged forged brass. These valves are provided with a general purpose solenoid enclosure.
Valves may also be provided with an explosionproof or explosionproof/watertightsolenoid enclosure.

OPERATION

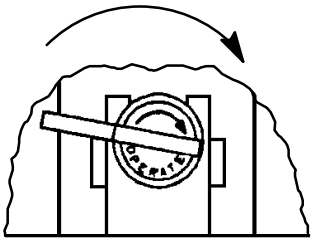
Normally Closed: Valve is closed when solenoid is de–energized; open when energized.

IMPORTANT: Minimum operating pressure differential is 5 psi.

Manual Operator (optional feature)

Manual operator allows manual operation when desired or during an electrical power outage. To engage manual operator (open the valve), turn lever clockwise until it hits a stop. Valve will now be in the same position as when the solenoid is energized. To disengage manual operator (close the valve), turn lever counterclockwise until it hits a stop.

To engage, turn lever clockwise until it hits a stop.



Partial view of Manual Operator

⚠ **CAUTION: For valve to operate electrically, manual operator lever must be fully rotated counterclockwise.**

INSTALLATION

Check nameplate for correct catalog number, pressure, voltage, frequency, and service. Never apply incompatible fluids or exceed pressure rating of the valve. Installation and valve maintenance to be performed by qualified personnel.

Future Service Considerations

Provision should be made for performing seat leakage, external leakage, and operational tests on the valve with a nonhazardous, noncombustible fluid after disassembly and reassembly.

Temperature Limitations

For maximum valve ambient and fluid temperatures, refer to chart below. Check catalog number prefix and watt rating on nameplate.

Watt Rating AC/DC	Catalog Number Prefix	Solenoid Class	Maximum Ambient Temp.	Maximum Fluid Temp.
6 AC	None or DF	F	122°F (50°C)	180°F (82°C)
	HT	H	140°F (60°C)	180°F (82°C)
6.1 AC	None, KF, SF or SC	F	125°F (54° C)	180°F (82°C)
	HT, KH, ST or SU	H	140°F (60°C)	180°F (82°C)
11.2 DC	None or HT	F or H	77°F (25°C)	150°F (65°C)
11.6 DC	None, HT, KF, KH, SC, SF or ST	F or H	104°F (40°C)	150°F (65°C)

Positioning

This valve is designed to perform properly when mounted in any position. However, for optimum life and performance, the solenoid should be mounted vertically and upright to reduce the possibility of foreign matter accumulating in the solenoid base sub–assembly area.

Piping

Connect piping to valve according to markings on valve body. Apply pipe compound sparingly to male pipe threads only. If applied to valve threads, the compound may enter the valve and cause operational difficulty. Avoid pipe strain by properly supporting and aligning piping. When tightening the pipe, do not use valve or solenoid as a lever. Locate wrenches applied to valve body or piping as close as possible to connection point.

⚠ **CAUTION: To protect the solenoid valve, install a strainer or filter suitable for the service involved in the inlet side as close to the valve as possible. Clean periodically depending on service conditions.**

MAINTENANCE

⚠ **WARNING: To prevent the possibility of death, serious injury or property damage, turn off electrical power, depressurize valve, and vent fluid to a safe area before servicing the valve.**

NOTE: It is not necessary to remove the valve from the pipeline for repairs.

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Cleaning

All solenoid valves should be cleaned periodically. The time between cleanings will vary depending on the medium and service conditions. In general, if the voltage to the coil is correct, sluggish valve operation, excessive noise or leakage will indicate that cleaning is required. In the extreme case, faulty valve operation will occur and the valve may fail to open or close. Clean strainer or filter when cleaning the valve.

Preventive Maintenance

- Keep the medium flowing through the valve as free from dirt and foreign material as possible.
- While in service, the valve should be operated at least once a month to insure proper opening and closing.
- Depending on the medium and service conditions, periodic inspection of internal valve parts for damage or excessive wear is recommended. Thoroughly clean all parts. If parts are worn or damaged, install a complete rebuild kit.

Causes of Improper Operation

- **Incorrect Pressure:** Check valve pressure. Pressure to valve must be within range specified on nameplate.
- **Excessive Leakage:** Disassemble valve and clean all parts. If parts are worn or damaged, install a complete rebuild kit.

Valve Disassembly

1. Disassemble valve in an orderly fashion using exploded views for identification and placement of parts. Refer to Figure 1 for AC construction; Figure 2 for DC construction. For 1″ or 1 ¼″ NPT valve construction, see Figure 1; for 1 ½″ NPT valve construction, see Figure 2.
2. Remove solenoid enclosure. See separate instructions.

- For valves supplied with optional manual operators, see section on ***Disassembly of Manual Operator***.

3. Unscrew solenoid base sub−assembly from valve body. Then remove core assembly with core spring and solenoid base gasket. For AC construction (Figure 1) core spring is a loose piece.
4. For normal maintenance (cleaning) it is not necessary to remove the valve seat. However, for valve seat removal use a 7/16″ thin wall socket wrench
5. Remove bonnet screws, valve bonnet, diaphragm spring, diaphragm assembly, body gasket, body passage eyelet (present on current valve constructions only) and body passage gasket.
6. All parts are now accessible for cleaning or replacement. If parts are worn or damaged, install a complete rebuild kit.

– Service Notice –

When installing a new rebuild kit, the parts supplied are shown in Figures 1 and 2. The parts supplied are new, improved and a direct replacement for the present parts providing all new parts are installed.

⚠ CAUTION: To ensure proper valve operation, install all parts supplied in rebuild kit. Do not mix old and new parts.

Valve Reassembly

1. Lubricate body gasket, body passage gasket, bonnet gasket and solenoid base gasket with DOW CORNING® 200 Fluid lubricant or an equivalent high−grade silicone fluid.
2. Install body passage gasket, body passage eyelet, diaphragm assembly, diaphragm spring, valve bonnet and bonnet screws. Hand thread screws as far as possible. Then torque bonnet screws in a crisscross manner to 144 ± 15 in−lbs [16,3 ± 1,7 Nm].
3. If removed, install valve seat in valve body. Apply a small amount of thread compound compatible with valve media to valve seat threads. Torque valve seat to 75 ± 10 in−lbs [8,5 ± 1,1 Nm].

- For valves supplied with optional manual operator, see section on ***Reassembly of Manual Operator***.

4. For AC construction (Figure 1), install core spring in core assembly. Wide end of core spring in core first, closed end protrudes from top of core.
5. Install solenoid base gasket, core assembly with core spring and solenoid base sub−assembly in valve body. Torque solenoid base sub−assembly to 175 ± 25 in−lbs [19,8 ± 2,8 Nm].
6. Install solenoid. See separate instructions.

⚠ WARNING: To prevent the possibility of death, serious injury or property damage, check valve for proper operation before returning to service. Also perform internal seat and external leakage tests with a nonhazardous, noncombustible fluid.

7. Restore line pressure and electrical power supply to valve.
8. After maintenance is completed, operate the valve a few times to be sure of proper operation. A metallic *click* indicates the solenoid is operating.

Disassembly of Manual Operator

1. Unscrew solenoid base sub−assembly from manual operator body.
2. Unscrew manual operator body from valve body. Then remove stem retainer from base of manual operator body and stem/spacer sub−assembly.
3. Pull stem/spacer sub−assembly with stem gasket from side of manual operator body. Then remove core assembly with core spring, solenoid base gasket and manual operator bonnet gasket.
4. For further disassembly refer to section on ***Valve Disassembly*** step 4.

Reassembly of Manual Operator

1. Lubricate stem gasket with DOW CORNING® 111 Compound lubricant or an equivalent high−grade silicone grease.
2. For AC construction (Figure 1), install core spring in core assembly. Wide end of core spring in core first, closed end protrudes from top of core.
3. Holding the manual operator body in a horizontal position, install core assembly with core spring from the bottom end.
4. Insert the stem/spacer sub−assembly with the stem gasket into the side hole of the manual operator body. Rotate the lever of the stem/spacer sub−assembly to the 12 o'clock position.
5. Install stem retainer on base of manual operator body and simultaneously engage it into the slot provided on the stem/spacer sub−assembly.

IMPORTANT: The spacer on the stem/spacer sub−assembly *must be inside* of the stem retainer for AC construction (Figure 1) and *outside* of the stem retainer for DC construction (Figure 2).

6. Install manual operator bonnet gasket and body with preassembled parts into valve body. Torque manual operator body to 175 ± 25 in−lbs [19,8 ± 2,8 Nm].
7. Replace solenoid base gasket and solenoid base sub−assembly. Torque solenoid base sub−assembly to 175 ± 25 in−lbs [19,8 ± 2,8 Nm].
8. For further reassembly, refer to ***Valve Reassembly*** step 6.

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Torque Chart

Part Name	Torque Value Inch–Pounds	Torque Value Newton–Meters
Solenoid base sub–assembly	175 ± 25	19,8 ± 2,8
Manual operator body		
Bonnet screw	144 ± 15	16,3 ± 1,7
Valve seat	75 ± 10	8,5 ± 1,1

ORDERING INFORMATION FOR REBUILD KITS

Parts marked with an asterisk (*) in the exploded view are supplied in Rebuild Kits. When Ordering Rebuild Kits for valves, order the Rebuild Kit number stamped on the valve nameplate. If the number of the kit is not visible, order by indicating the number of kits required, and the Catalog Number and Serial Number of the valve(s) for which they are intended.

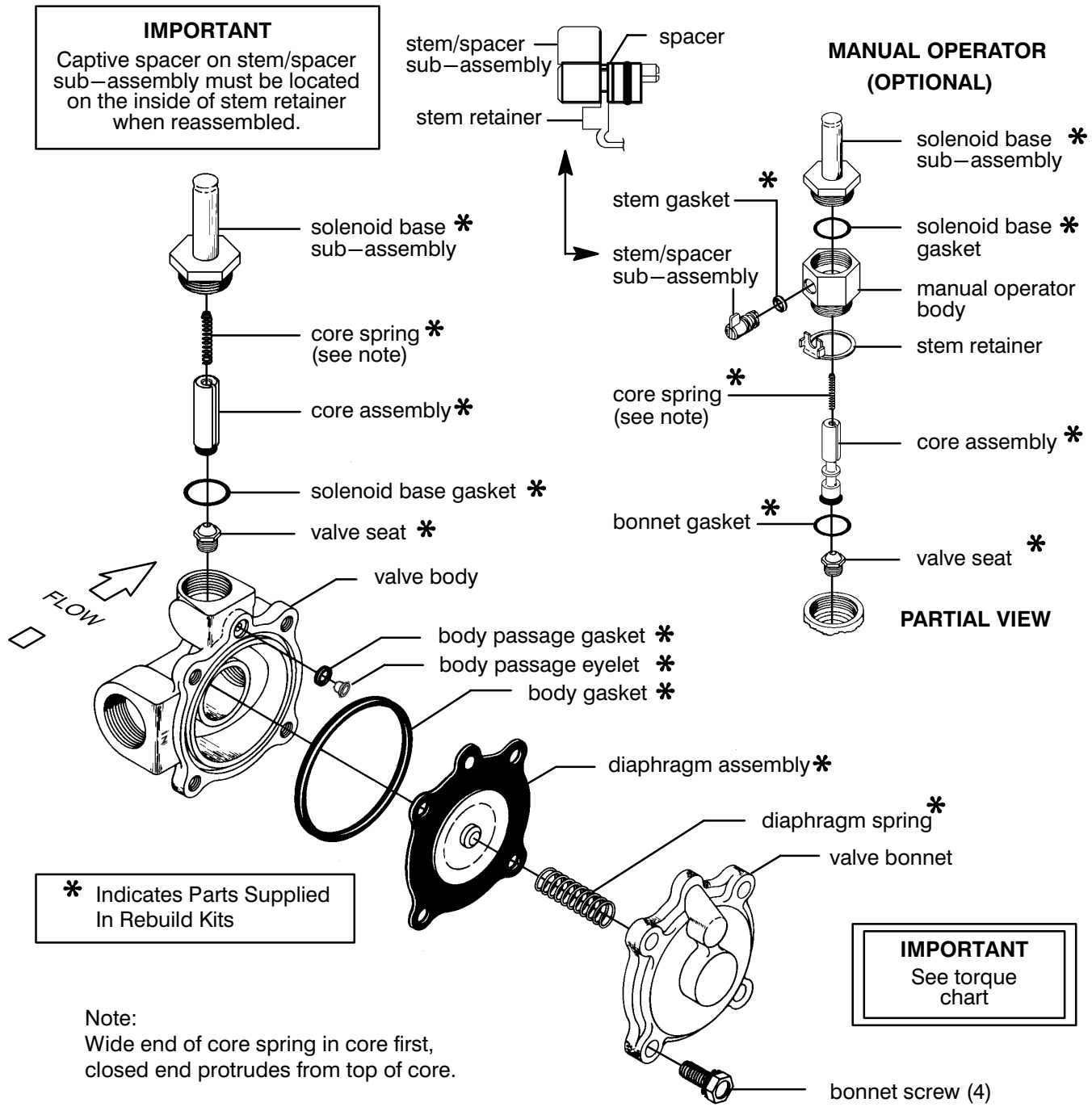

Figure 1. Valve without solenoid, AC construction with 1″ or 1 ¼″ NPT valve body shown.

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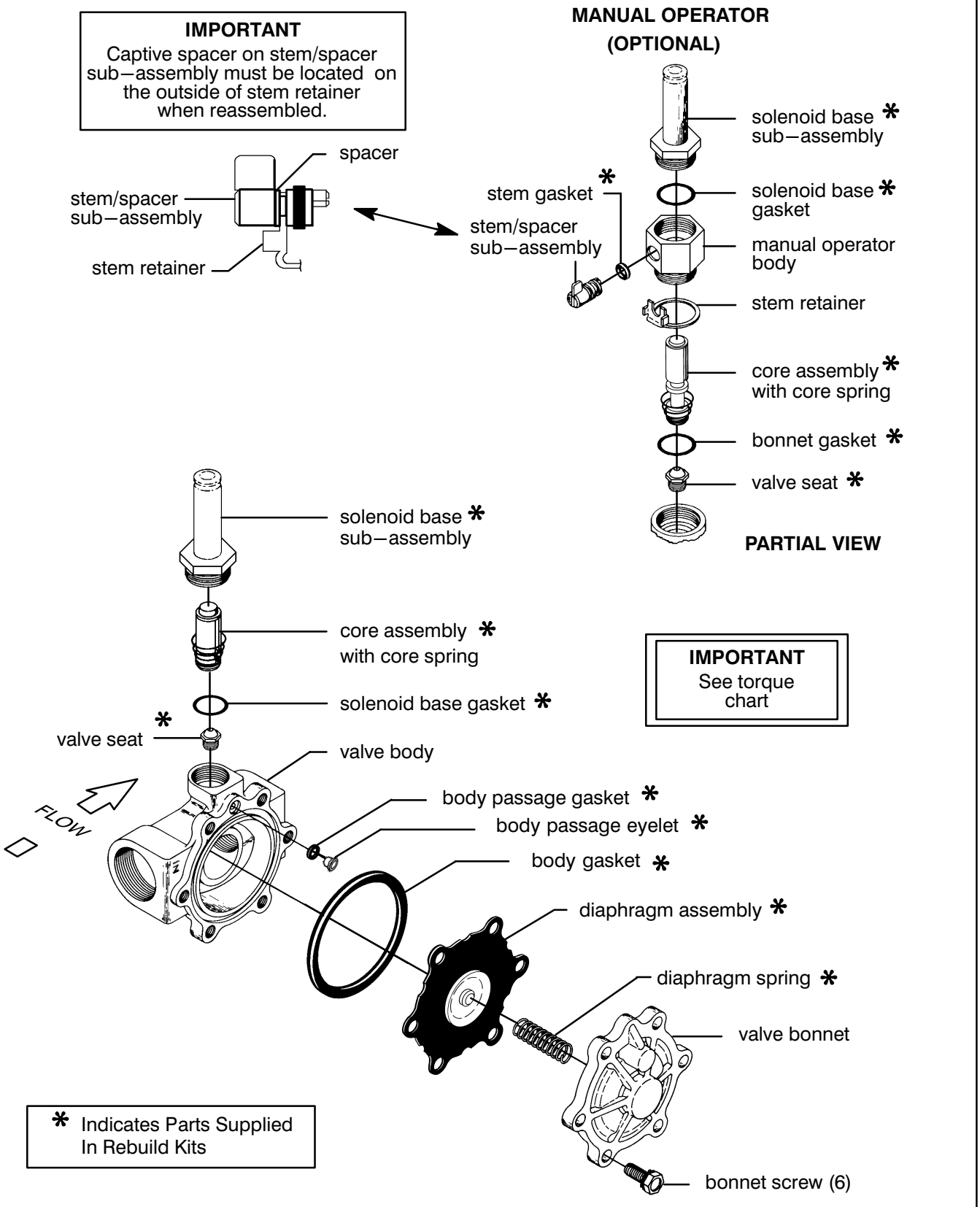

Figure 2. Valve without solenoid, DC construction with 1 ½″ NPT valve body shown.

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